

ABSTRACT OF THE DISCLOSURE

An antenna comprising a reflector having a reflector surface profile for reflecting a plurality of signals comprising a plurality of communication bands; a multi-depth corrugated horn assembly for receiving the signal comprising the plurality of communication bands; a stepped waveguide coupled to the corrugated horn; a first polarizer coupled to the stepped waveguide for separating a first communication band from the plurality of communication bands; a second polarizer coupled to the stepped waveguide for separating a second communication band from the plurality of communication bands; and a third polarizer coupled to the stepped waveguide for separating a third communication band from the plurality of communication bands. The antenna can simultaneously operate in the K, Ka and EHF frequency bands. Extension of this antenna to include five separate frequency bands is demonstrated.